



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/518,215

08/03/2005

Jung-Suek Ko

4366-045857

3577

7590

12/27/2007

Richard L Byrne  
700 Koppers Building  
436 Seventh Avenue  
Pittsburgh, PA 15219-1845

EXAMINER

YOO, REGINA M

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

12/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/518,215	Applicant(s) KO, JUNG-SUEK	
	Examiner Regina Yoo	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10/12/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**FINAL ACTION**

***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer (5656238) in view of Caputo (6261518).

Spencer ('238) discloses a plasma sterilization apparatus (10), comprising a sterilization chamber (11) for receiving therein a sterilization object, a high frequency power source (14; see Col. 4, lines 41-47), connected to a cathode (27), for generating optimal plasma under control of an impedance matching device (see Col. 4, lines 29-30, which is known in the art to be comprised of both an impedance matching controller and an impedance matching circuit), the cathode (27) being installed, along with an anode (chamber 11 wall) at a predetermined distance, in the sterilization chamber (11) (see Figure 1; or 27 is also disclosed as an electrode array which is deemed to incorporate cathodes and anodes), and a vacuum pump (12), connected through an exhaust pipe (see Figure 1 where the exhaust pipe is the pipe connecting the chamber 11 and the valve 17) to the sterilization chamber (11), for extracting air from the sterilization chamber to form a vacuum state in the sterilization chamber (see Col. 4, lines 31-35).

Spencer ('238) does not appear to specifically teach that a dehumidifier is associated with the exhaust pipe of a vacuum chamber.

Caputo ('518) discloses a vacuum chamber (312) where the exhaust pipe (322, 324) that connects the vacuum chamber (312) to a vacuum pump (316) is equipped with a condenser (314; wherein the condenser acts as a dehumidifier) in order to remove evaporated water generated and from the vacuum chamber and flowing through the exhaust pipe (322) by condensing the evaporated water (see Col. 13, lines 6-8; as the condenser is placed before the vacuum pump, the entry of water vapor into the vacuum pump is prevented).

It was known in the art at the time of invention to place a dehumidifier before a vacuum pump in association with a vacuum chamber used in sterilization. It would have been obvious to one of ordinary skill in this art at the time of invention to provide a dehumidifier in the form of a condenser in the device of Spencer in order to remove water vapor exiting from the vacuum sterilization chamber as shown by Caputo.

Thus, Claim 1 would have been obvious within the meaning of 35 U.S.C. 103(a) over the combined teachings of Spencer ('238) and Caputo ('518).

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer (5656238) in view of Caputo (6261518) as applied to claim 1 above, and further in view of Bagley (6519956).

Spencer ('238) and Caputo ('518) are relied upon for disclosure described in the rejection of claim 1 under 35 U.S.C. 103(a).

While Caputo ('518) discloses use of a condenser as a dehumidifier, neither Spencer ('238) nor Caputo ('518) appears to specifically teach that said dehumidifier

forms a freezing cycle which is further comprised of a compressor, a freezer and an expansion valve, in addition to the condenser.

It was well known in the art at the time of invention to use a dehumidifier to remove water from an air stream. Bagley ('956) discloses that it was known in the art for a dehumidifier which is comprised of a compressor (1), a condenser (2), an expansion valve (3; see Col. 2, lines 43-44) and a freezer (4) forming a freezing cycle (see Col. 1, lines 16-67 through Col. 2, lines 1-12) in order to dry/remove water from air (see Col. 1, lines 21-23 and Col. 2, lines 13-14).

It would have been obvious to one of ordinary skill in this art at the time of invention to provide a dehumidifier comprised of a compressor, a condenser, an expansion valve and a freezer/evaporator in the exhaust pipe in the device of Spencer as modified by Caputo in order to dry/remove water from the air stream as shown by Bagley. It would also have been well within the purview of one of ordinary skill in the art to provide the freezer/evaporator in a housing that is then connected to the exhaust pipe in order to collect the water condensed from air stream on the exterior of the freezer/evaporator so as to ensure that all the water is collected for convenient removal and that all condensed water will not reenter the treated/dehumidified air stream to reach the vacuum pump located further downstream. Only expected results would be attained.

Thus, Claim 2 would have been obvious within the meaning of 35 U.S.C. 103(a) over the combined teachings of Spencer ('238), Caputo ('518) and Bagley ('956).

***Response to Arguments***

4. Applicant's arguments filed 10/12/2007 have been fully considered but they are not persuasive.

In response to Applicant's arguments that Spencer "teaches a plasma enhanced vacuum drying method wherein multiple evacuations...are performed prior to the application of the plasma to remove excess moisture from the product" where "Spencer fails to suggest incorporating any type of dehumidifier in to the device for drawing off this excess moisture before it cycles through the vacuum chamber and a vacuum pump" and that "the device of Caputo is so far removed from the device that one having ordinary skill in the art would not look to the teachings of Caputo when determining a method of removing a water vapor byproduct, resulting from a hydrogen peroxide plasma sterilization process, exiting from the vacuum sterilization chamber of Spencer", Examiner would disagree and point out that Caputo does teach a device in the plasma sterilization art, wherein a water vapor byproduct is removed via a condenser 314 and further indicates that the lyophilizer chamber 312 acts as a sterilizing chamber with the evacuation provided by the vacuum pump 316 for sterilization of articles and material therein (see Caputo Col. 13 lines 27-30 and 33-35).

Thus, while chamber 312, condenser 314 and vacuum pump 316 are also used to perform/assist in the preservation of the pharmaceuticals, these devices primarily form a part of a sterilization apparatus, and the condenser removes any resulting water vapor during the sterilization process. It appears Applicant may be mischaracterizing the teaching in Caputo. It is known in the sterilization art to provide a dehumidifier

(condenser) in an exhaust pipe of a sterilization chamber and prior to a vacuum pump in order to remove water vapor as exemplified by Caputo. One of ordinary skill in the art would readily recognize the benefits of removing water vapor at this point in the sterilization apparatus.

Moreover, Examiner would point out that the failure to explicitly "acknowledge that the presence of excess water cycling through the vacuum pump is problematic" by Spencer does not necessarily indicate that "Spence actually teaches away from employing a dehumidifier in the system", unless there is a specific written teaching that states that a dehumidifier should not be utilized as a part of the apparatus (which there is no such teaching in Spencer).

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Application/Control Number:  
10/518,215  
Art Unit: 1797


Page 7

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Yoo whose telephone number is 571-272-6690. The examiner can normally be reached on Monday-Friday, 9:30 am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RY



GLADYS JP CORCORAN  
SUPERVISORY PATENT EXAMINER